

- 14 -

## Claims

- 5 1. A paging control method for a mobile communication network to which at least two non-coordinated core networks are connected, comprising the steps of:
- 10 a) checking a service state of a mobile station; when a request for a paging message to said mobile station has been received from one of said non-coordinated core networks; and
- 15 b) transmitting a multicall paging message using an existing signaling link and/or mobile station location information known in a radio access network, when said mobile station is already connected to another one of said non-coordinated core networks.
- 20 2. A paging control method according to claim 1, wherein said checking step is performed by a radio network controller of said mobile communication network by determining whether said mobile station has already a connection, wherein a normal paging operation by using a paging channel is performed, when the mobile station has no connection.
- 25 3. A paging control method according to claim 1 or 2, wherein said multicall paging message is transmitted on a channel selected in accordance with the service state of said mobile station.
- 30 4. A paging control method according to claim 3, wherein said multicall paging message is transmitted on a dedicated channel, when said mobile station is in a dedicated channel active state.
- 35 5. A paging control method according to claim 4, wherein said multicall paging message contains an information

- 15 -

defining a requested bearer, a page mode and a core network identification.

6. A paging control method according to claim 3, wherein  
5 said multicall paging message is transmitted on an FACH  
channel, when said mobile station is in an RACH/FACH state.

7. A paging control method according to claim 6, wherein  
said multicall paging message includes an information  
10 defining a requested bearer, a core network identification  
and a page mode.

8. A paging control method according to claims 7, wherein  
said multicall paging message includes an information  
15 defining a dedicated channel which said mobile station has  
to start using for signaling.

9. A paging control method according to claim 3, wherein  
said multicall paging message is transmitted on a PCH  
20 channel, when the mobile station is in an RACH/PCH state.

10. A paging control method according to claim 9, wherein  
said multicall paging message includes an information  
defining a requested bearer, a core network identification  
25 and a radio network temporary identity.

11. A paging control method according to claim 5, 7 or 10,  
wherein said mobile station checks a possibility of  
creating the requested bearer and responds with a multicall  
30 paging response message comprising an information as to  
whether the requested bearer can be created, or not, and an  
appropriate protocol information.

12. A paging control apparatus for a mobile communication  
35 network to which at least two non-coordinated core networks  
(5, 6) are connected, comprising:

- 16 -

a) means (3) for checking a service state of a mobile station (1), when a request for a paging message to said mobile station (1) has been received from one said of non-coordinated core networks (5, 6); and

- 5 b) means (3) for transmitting a multicall paging message using an existing signaling link and/or mobile station location information known in a radio access network, when said mobile station is already connected to another one of said non-coordinated core networks.

10

13. A paging control apparatus according to claim 12, wherein said paging control apparatus comprises a radio network controller (3) of said mobile communication system.

- 15 14. A paging control apparatus according to claim 12 or 13, wherein said non-coordinated core networks comprise a GSM-GPRS core network with no Gs interface between a Mobile Switching Center (5) and a Serving GPRS Support Node (6).

- 20 15. A paging control apparatus according to one of claims 12 to 14, wherein said mobile communication network comprises a GSM network.

- 25 16. A paging control apparatus according to one of claims 12 to 15, wherein said non-coordinated core networks comprise a GSM network, a GPRS network, a GSM based UMTS, a GPRS based UMTS or any other circuit- and/or packet-switched core network nodes.

- 30 17. A paging control apparatus according to claim 16, wherein said one of said non-coordinated core networks comprises a mobile switching center (5) and wherein said other one of said non-coordinated core networks comprises a Serving GPRS Support Node (6), or vice versa.

35

- 17 -

18. A paging control apparatus according to claim 17, wherein said mobile switching center is a GSM based UMTS mobile switching center and wherein said Serving GPRS Support Node is a GPRS based UMTS SGSN.